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Division of Forest Insect Investigations

MOUNTAIN PINE BEETLE INFESTATIONS
NORTHERN IDAHO AND MONTANA
1952

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MOUNTAIN PINE BEETLE INFESTATIONS

NORTHERN IDAHO AND MONTANA
1952

Within the forests of the northern Rocky Mountains the mountain pine beetle (Dendroctonus monticolae) is a destructive enemy of pine trees. In this region its primary destructiveness is in western white pine and lodgepole pine, although serious losses have occurred in ponderosa pine.

The ability of this beetle to build from low to high populations in a few years, makes it a constant threat to the security of all susceptible pine forests. Natural forces of control, such as parasitic and predacious insects, insectivorous birds, and other environmental factors, tend to prevent the occurrence of such epidemic outbreaks. Unfortunately from time to time these beneficial factors fail, and epidemic beetle populations develop rapidly which often destroy large volumes of timber in a few years. Such outbreaks persist until a proper relationship is established between beneficial and injurious forces, or until direct control has reduced the potential threat of the outbreak.

This report presents the 1952 status of mountain pine beetle infestations within the western white pine and lodgepole pine stands of northern Idaho and Montana. Data were obtained from surveys conducted by the Coeur d'Alene Laboratory of the Bureau of Entomology and Plant Quarantine. Assistance was given to this program by the forestry staffs of Potlatch Forests, Inc. and the State of Idaho. These organizations assumed the responsibility of conducting bark beetle surveys on the large area of forest land outside the west boundary of the Clearwater National Forest, and they did a splendid job. This assistance, which involved both man power and funds, was more than appreciated. It would have been practically impossible for this laboratory to have conducted the survey of this area with the resources that were available to us. The cooperation of industry on all phases of existing forest insect problems has been most gratifying, and has contributed materially to our accomplishments.

Preliminary to the start of ground work an extensive aerial survey was made during July of all forested areas within the region. This survey was not designed to locate and map all single and small groups of infested trees, as such light infestations are to be found in all mature pine stands. It was designed to locate all areas of severe and potentially severe infestation, and it is believed that this objective was successfully accomplished. The aerial survey was followed by intensive ground

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Compiled by James C. Evenden, Entomologist in Charge.

surveys of all areas where dangerous, or potentially dangerous, infestations were indicated. Data obtained from western white pine and lodgepole pine are presented separately and by national forest areas.

MOUNTAIN PINE BEETLE INFESTATION
WESTERN WHITE PINE

In all western white pine stands there are so called normal infestations of the mountain pine beetle. Such infestations are associated with low level beetle populations and the loss of timber for any one year is not a startling figure. However, over a period of time this annual loss often builds to a rather large per cent of the residual pine stocking. Furthermore, as has been stated, such infestations change rapidly to epidemic conditions, and a severe destruction of valuable timber follows.

In northern Idaho and Montana there are approximately 12,000,000 M. B. F. of valuable white pine on an area of some 678,000 acres. During the past ten years the annual loss of white pine on this acreage, as a result of mountain pine beetle attack, has been approximately 88,000 M. B. F. This figure, drawn from past surveys conducted by the Coeur d'Alene laboratory, includes losses from both normal and epidemic infestations.

CLEARWATER NATIONAL FOREST

This season's survey program included those areas of white pine on the Clearwater National Forest where aerial reconnaissance and previously conducted ground surveys indicated a need for more intensive data. These areas and the data obtained are shown in the following tabulation.

Unit	Acres of Unit	Intensity of Survey	Green Trees Per Acre	Infested Trees Per Acre	Infested Trees Total
Isabella	3,800	.1%	9.6	.103	390
Little Wash. & Eagle	2,720	4.3%	25.0	.34	924
Canyon	3,300	2.0%	34.0	.445	1,468
Orogrande	4,000	8.0%	54.0	.43	1,720
Skull	6,000	1.5%	51.5	.59	3,560
Sheep Mt.	1,350	3.3%	17.6	.02	27
Quartz Cr.	11,000	1.3%	34.0	.38	4,180
Dead Horse	1,600	2.8%	29.6	.07	106
					12,375

The data presented do not depict the total infestation on the Clearwater National Forest. It covered only those units where as stated, potentially

serious infestations were anticipated. There are many other large acreages of white pine where light infestations exist, with an annual loss of not much less than .3 of a tree per acre.

A more detailed presentation of these different units follows. This presentation shows the history of the infestation during the past few years, as we know of it from previous surveys.

Isabella Creek

No previous data are available for this area, and this year's coverage was a reconnaissance survey only. The data obtained indicate a light infestation of the mountain pine beetle, that is not considered serious. This area was included in this year's program as a few small spots of red tops were recorded by the aerial reconnaissance.

Little Washington and Eagle Creeks

The first indication of any abnormal bark beetle activity in this unit was obtained from an aerial detection survey made late in the 1951 season. At that time the severity of the infestation, based upon the red tops of 1950 attacks, was estimated at approximately 1 infested tree per acre. As this season's survey indicated .34 of a tree per acre, it is obvious that the aerial survey estimate was high or a reduction in the severity of the infestation has occurred. However, the current season's infestation is quite severe, and can become more so in another season.

Canyon

History of Infestation During Past Years

1952 Infested Trees		1951 Infested Trees		1950 Infested Trees		Loss of Trees	
Per Acre	Total	Per Acre	Total	Per Acre	Total	Annual	Total
.445	1,468	.44	1,452	.07	231	1,050	3,151

These data show an increased infestation for 1951 and continuing at practically the same level for 1952. No evidence was obtained indicating any decrease in the severity of the infestation in 1953.

Orogrande

History of Infestation During Past Years

1952 Infested Trees		1951 Infested Trees		1950 Infested Trees		Loss of Trees	
Per Acre	Total	Per Acre	Total	Per Acre	Total	Annual	Total
.43	1,720	.38	1,560	.11	451	1,244	3,731

This is a rather large acreage of valuable white pine, with an infestation that during the past three years has increased in its severity. The infestation history of this area is an interesting one. Surveys prior to 1940 show a rather severe infestation of the mountain pine beetle within the lodgepole pine stands of this drainage. For example, in 1940 there were 2,716 infested lodgepole with no recorded infestation in white pine. During the winter of 1948-1949 a rather severe white pine blowdown occurred in portions of the area. The following season our survey showed a total of 1,970 infested standing and windthrown white pine. Since that time there has been a definite build-up of the infestation.

Skull Creek

1952 Infested Trees		1951 Infested Trees		1950 Infested Trees		Loss of Trees	
Per Acre	Total	Per Acre	Total	Per Acre	Total	Annual	Total
.59	3,560	.62	3,720	.52	3,120	3,466	10,400

During the past three years this rather severe infestation has remained at approximately the same level. As detection survey of this unit in 1948 did not indicate any abnormal number of red tops (1947 kill), the present rather serious situation has developed subsequent to that time.

Sheep Mountain

During past years severe losses of white pine from mountain pine beetle attacks have occurred within this area. Last year the loss in the severely infested portion of this area was placed at 10 per cent of the residual white pine stocking. This portion of the unit has been sold and the timber will be removed during the coming season. The 1952 survey was confined to the southern portion of the area, which was understood as not being included within the sale area.

Quartz Creek

1952 Infested Trees		1951 Infested Trees		1950 Infested Trees	
Per Acre	Total	Per Acre	Total	Per Acre	Total
.38	4,181	--	--	.24	2,640

Data for this area were obtained from reconnaissance surveys. Reconnaissance surveys are designed to show the seriousness of current infestations and determine the need for further consideration. However, a rather serious infestation is indicated that is quite comparable to that which is found in all white pine stands of the Clearwater River drainage.

Deadhorse Creek

1952 Infested Trees		1951 Infested Trees		1950 Infested Trees	
Per Acre	Total	Per Acre	Total	Per Acre	Total
.07	106	.21	336	.15	240

Little change has occurred in the severity of the mountain pine beetle infestation within this unit during the past three years. As the history of past surveys within this area shows a heavy depletion of the white pine stand, it is quite apparent that the timber stand is quite susceptible to beetle attacks.

In addition to the surveys conducted by this laboratory, a great deal of additional information as to the presence of mountain pine beetle infestations in white pine was provided by Potlatch Forests, Inc., and the State of Idaho. These additional data have been most valuable in providing for a complete report. A summary of the data obtained is shown in the following tabulation.

Clearwater Unit

Area	Acres		Per Cent of White Pine Trees Killed by Beetles	
	Total for Unit	White Pine Type	1951	1952
1 N.F.Orofino Cr.	91,853	-	2	3
2A Poorman Cr.	22,246	-	1	2
3 Silver Cr.	28,928	-	1	1
4 Bertha Hill	7,014	-	2	2
5 Benton Cr.	28,544	-	2	3
6 N.F.Reed Cr.	589	-	3	6
9 Dennison Cr.	896	-	1	1
Potlatch Unit				
1 Island Ranch	49,408	-	2.0	1.5
1A Dent	29,184	-	.4	.2
2 Lone Creek	11,110	-	-	-
3 Jackson Mt.	6,195	-	-	-
5 Floodwood	133,760	-	1.9	2.4
12 & 12A Crain & Gold Hill	9,958	-	-	.5
13 Gold Hill	2,918	-	-	-

COEUR D'ALENE NATIONAL FOREST

During past years bark beetle surveys have shown a severe annual loss of white pine on the Coeur d'Alene National Forest. During this period control measures directed to the most heavily infested areas have contributed to the prevention of serious epidemic outbreaks, but have not prevented a heavy annual loss. This season's survey program included white pine areas where 1951 surveys, and this year's aerial reconnaissance, indicated the need for more intensive data. The results of our 1952 surveys are shown in the following tabulation.

Unit	Acres of Unit	Intensity of Survey	Infested Trees Per Acre	Infested Trees Total
Upper Flat Creek	3,680	2.7%	.04	147
Taylors Camp	2,800	4.3%	.15	420
Cougar Creek	7,300	4.8%	.057	416
Rock City	1,600	2.1%	.12	192
Brett Miner	1,550	1.3%	.05	78
East Fork Steamboat	2,720	5 %	.074	199
West Fork Steamboat	3,960	2.3%	.10	396
Clay Creek	1,640	3.9%	.125	205
				2,056

These data depict only the loss of white pine on those areas of the Coeur d'Alene National Forest where the infestation was known to be most serious. There is a low level infestation in all mature white pine stands which at this time would be estimated at .04 of an infested tree per acre.

KANIKSU NATIONAL FOREST

The Lightning Creek drainage was the only white pine area on the Kaniksu National Forest where an intensive mountain pine beetle survey was conducted in 1952. During July an aerial survey of this forest failed to show any abnormal numbers of red topped (1951 attacks) white pine trees. Although this area was not included in our original survey program, our plans were changed at the request of the Forest Service, that for specific reasons desired current information as to the status of the 1952 infestation.

Unit	Acres of Unit	Intensity of Survey	Green Trees Per Acre	Infested Trees Per Acre	Infested Trees Total
Lightning Creek	11,000	5.5%	11.6	.055	605

In 1950 a 2% survey of this area showed an infestation of .10 of an infested tree per acre. This season's data show a comparable situation that is not considered serious. Statements concerning the low level infestation in all white pine stands of other forests are applicable to this forest as well.

KOOTENAI NATIONAL FOREST

An aerial survey of the Kootenai National Forest did not reveal any white pine areas showing more than a few scattered red tops (1951 attacks). However, later in the season additional information was received that recorded light mountain pine beetle infestations in two white pine areas. A thorough reconnaissance survey of these areas was made to determine the need for more intensive data. The results are shown in the following tabulation.

Unit	Acres of Unit	Intensity of Survey	Green Trees Per Acre	Infested Trees Per Acre	Infested Trees Total
Spread Creek	1,367	2.0%	15	.14	191
Pete Creek	2,880	2.6%	6.7	.027	77

Past losses of white pine within these drainages have been severe. In the Pete Creek drainage at least 50 per cent of the white pine has been destroyed during the past twenty-five years. The past loss in the Spread Creek area has not been so severe, but still a large per cent of the total stand has been destroyed during the same period. Regardless of past losses within these areas, the current status of the infestation is not overly serious.

MOUNTAIN PINE BEETLE INFESTATION
LODGEPOLE PINE

There are low level infestations of the mountain pine beetle in all mature lodgepole pine stands. Such infestations are often hard to record as the beetle populations are to be found in low vigor trees usually injured by some environmental or mechanical action. Under conditions favorable for their increase these infestations build to epidemic populations in a few years, and when once established spread over large areas of merchantable lodgepole pine. The history of past epidemics of this beetle within the northern Rocky Mountains show quite clearly its importance as a destructive enemy of this now most valuable tree species. The most serious aspect of mountain pine beetle infestations in lodgepole pine is the spread potential of such outbreaks.

Cabinet National Forest

Units of this forest included in this season's survey program were within the area covered by the Cooperative Thompson River Control Project where control was conducted again during May and June 1952. These surveys were designed to check the results of control, and to determine the need for further work. An aerial survey of the forest earlier in the season did not show any abnormal number of red topped trees (1951 attacks) on areas other than those surveyed.

Unit	Acres of Unit	Intensity of Coverage	Green Trees Per Acre	Infested Trees Per Acre	Infested Trees Total
Bowers Peak	1,400	5%	25	.57	798
Dahl Lake	410	7%	-	~~7.00~~ 9.1	3,731
Lynch Lake	548	17%	49	.47	257
Meadow Creek	1,800	4.8%	24	.14	252
Indian Creek	1,300	7.3%	34	.15	195
Lazier Creek	1,850	4.7%	59	.10	185
Upper Thompson	2,550	2.2%	14	.07	178

Although there is a light infestation of the mountain pine beetle in other lodgepole pine stands of this forest, the areas surveyed include the most heavily infested ones. A brief discussion of these units follow.

Bowers Peak

The 1951 survey of this unit showed an infestation of .31 of a tree per acre. Although as a part of the Thompson River control project, control was recommended for this area, circumstances prevented the completion of

the plan. This season's data indicates a slight increase in the severity of the infestation or .57 of a tree per acre. Although the attacks do not extend to a great height on the bole, the brood of overwintering beetles are quite heavy.

Dahl Lake

In 1950 a survey of this unit indicated a light mountain pine beetle infestation of .06 of an infested tree per acre. This year's aerial survey recorded an abnormal number of red tops (1951 attacked trees). The ground survey which followed the aerial reconnaissance showed a serious mountain pine beetle infestation of 7 infested lodgepole pine trees per acre, or a total for the unit of 3,731 trees. This is an instance of a marked increase in the severity of an infestation during a two year period. The infested trees are heavily attacked and the broods are large.

Lynch Lake

In 1951 a total of 1,257 infested lodgepole pine trees were treated within the Lynch Lake unit. The 1951 reinfestation amounted to 650 trees, which were treated in the spring of 1952. This season's reinfestation of the area amounts to some 257 infested trees.

Meadow Creek - Indian Creek - Lazier Creek, and Upper Thompson River Units

All of these four units were covered by control in May and June 1952. This season's survey shows a decrease in the severity of the infestation, especially in the severity of the individual attacks. For example, the attacks do not extend high upon the bole, there are many pitched out attacks, and the brood resulting from the successful attacks are light.

KOOTENAI NATIONAL FOREST

Lodgepole areas on the Kootenai National Forest included in the past season's survey program were those where control was conducted in 1952, and where potentially dangerous situations were thought to exist. An aerial survey of this forest in July 1952, failed to show any other areas than those selected where serious situations could exist. A summary of the data obtained follows.

Unit	Acres of Unit	Intensity of Coverage	Green Trees Per Acre	Infested Trees Per Acre	Infested Trees Total
Upper Ford	1,958	4.5	84	.545	1,067
Vinal Lake	1,600	2.5	46	.10	160
Windy Creek	951	6.6	50	.44	423
Zimmerman Hill	670	2.5	30	--	--
Beaver Creek	2,760	3.3	77	.054	149
Porcupine	385	3.4	103	.23	88
Basin	960	2.1	118	.048	46
Hensley Hill	700	5.0	64	--	--
Copeland Cr.	685	9.0	5	.16	109
Solo Joe	580	3.8	57	.045	26

Although there are other infested lodgepole pine stands within this forest, the areas included in this year's program are the most heavily infested ones. A brief discussion is given as to the infestation history within these areas.

Upper Ford

A 1949 survey of this area showed an infestation of .19 of an infested lodgepole pine tree per acre. This infestation remained practically the same in 1950. In 1951 the infestation was reduced to .04 of a tree, but this year's data shows an infestation of .545 trees per acre. It is quite apparent that this infestation is again increasing.

Windy Creek

Surveys in 1949 and 1950 showed infestations of .45 and .34 of an infested lodgepole pine tree per acre. In 1951, the infestation was still .33 of a tree per acre, and control was conducted in May 1952. However, in 1952, a thorough survey showed a reinfestation of .44 of an infested tree per acre.

Porcupine Creek

The infestation within this area is quite light, but can be considered as potentially serious. In 1950 the infestation was set at .95 of a tree per acre. This infestation was treated in the spring of 1951, and the 1951 reinfestation of the treated area amounted to .03 of a tree per acre. This season's survey indicates a rebuilding of the severity of the infestation to .23 of a tree per acre.

The other areas included in this season's survey program do not have infestations of sufficient severity to warrant further consideration at this time.

CONCLUSIONS

This report depicts the status of the mountain pine beetle infestations within the western white pine and lodgepole pine stands of Region One. It is not a complete story for as previously stated there are infestations of this beetle in all mature pine forests. However, it lists the potentially dangerous areas as we know of them at this time, and the status of the infestation within them. No recommendations for direct control are included. Such recommendations are to be drawn from conferences with the land managing agencies responsible.